IN THE CLAIMS

The current status of the claims is reflected in the below listing of claims.

1. - 14. (Canceled)

15. (Previously Presented) The method as recited in claim 42 or 43 wherein the array comprises at least 20 different materials comprising two or more layers.

16. (Previously Presented) The method as recited in claim 42 or 43 wherein the array comprises at least 50 different materials comprising two or more layers.

17. (Previously Presented) The method as recited in claim 42 or 43 wherein the array comprises at least 100 different materials comprising two or more layers.

18. (Previously Presented) The method as recited in claim 42 or 43 wherein the array comprises at least 500 different materials comprising two or more layers.

19. (Previously Presented) The method as recited in claim 42 or 43 wherein the array comprises at least 1000 different materials comprising two or more layers.

20. (Previously Presented) The method as recited in claim 42 or 43 wherein the array comprises at least 10,000 different materials comprising two or more layers.

21. (Previously Presented) The method as recited in claim 42 or 43 wherein the array comprises at least 100,000 different materials.

22. (Previously Presented) The method as recited in claim 42 or 43 wherein the array comprises at least 1,000,000 different materials.

23. (Previously Presented) The method as recited in claim 42 further comprising physically masking the substrate while delivering one or more components to a region of the substrate.

24. (Previously Presented) The method as recited in claim 42 wherein the components of the ten or more materials are delivered using a delivery technique selected from the group consisting of sputtering techniques, spraying techniques, laser ablation techniques, electron beam evaporation techniques, thermal evaporation techniques, ion-beam techniques, ion implantation techniques, doping techniques, chemical vapor deposition techniques and liquid dispensing techniques.

25. (Canceled)

26. (Previously Presented) The method as recited in claim 43 wherein said useful property is selected from the group consisting of electrical, thermal, mechanical, morphological, optical, magnetic and chemical properties.

27. - 29. (Canceled)

30. (Previously Presented) The method as recited in claim 42 or 43 wherein each of at least ten of the different materials comprises 3 or more components.

31. (Previously Presented) The method as recited in claim 42 or 43 wherein each of at least ten of the different materials comprise 4 or more components.

32. (Previously Presented) The method as recited in claim 42 or 43 wherein each of at least ten of the different materials comprise 5 or more components.

33. (Previously Presented) The method as recited in claim 42 or 43 wherein each of at least ten of the different materials comprise 6 or more components.

34. (Previously Presented) The method as recited in claim 42 or 43 wherein each of at least ten of the different materials comprise 7 or more components.

35. (Previously Presented) The method as recited in claim 42 or 43 wherein each of at least ten of the different materials comprise 8 or more components.

36. - 41. (Canceled)

42. (Currently Amended) A method for making an array of diverse materials, the method comprising

forming ten or more inorganic materials on ten or more predefined discrete regions of a rigid substrate, respectively, each of at least ten of the materials being different from each

other and **each** being formed **from at least two components in each region** by a method that comprises

delivering a first component of ~~the material~~ **of each of said materials** to **each of** the respective predefined discrete ~~region~~ **regions** of the substrate to form a first solid layer ~~of~~ **comprising** the first component on the substrate **in each region**,

delivering a second component of ~~the material~~ **of each of said materials** to **each of** the respective predefined discrete ~~region~~ **regions** to form a second solid layer ~~of~~ **comprising** the second component on the first layer **in each region**, and

varying the **combination** ~~composition, concentration, or thickness~~ of the delivered ~~first or second~~ components ~~between~~ **among** respective regions,

the substrate comprising a sufficient amount of space between the ten or more regions such that the delivered components do not substantially interdiffuse between the ten or more regions of the substrate.

43. (Previously Presented) A method for identifying useful materials, the method comprising

making an array comprising ten or more different materials according to the method of claim 42,

screening the at least ten different materials for a useful property of interest, and

determining the relative performance of the at least ten different materials with respect to the property of interest.

44. (Canceled)

45. (Previously Presented) The method of claim 42 or 43 wherein the at least ten different materials comprise layers of the delivered components of the materials.

46. (Previously Presented) The method of claim 42 or 43 wherein the method for forming the at least ten different materials further comprises allowing two or more components of the at least ten different materials to interact.

47. (Currently Amended) The method of claim 46 wherein **forming the ten or more inorganic materials further comprises annealing, to thereby cause** the components **to** interact by intermingling, interdiffusing interspersing, doping, implanting, interpenetrating, condensing or fusing.

48. (Currently Amended) The method of claim 46 wherein **forming the ten or more inorganic materials further comprises annealing at a temperature ranging from about 200°C to about 300°C, to thereby cause** the components **to** interact, without reaction, by intermingling, interdiffusing, interspersing, doping, implanting, interpenetrating, condensing or fusing.

49. (Canceled)

50. (Canceled)

51. (Previously Presented) The methods of claims 42 or 43 wherein the density of the ten or more material-containing regions is greater than about 1 region per 25 cm^2.

52. (Previously Presented) The method of claims 42 or 43 wherein the density of the ten or more material-containing regions is greater than about 1 region per 10 cm^2.

53. (Previously Presented) The method of claim 42 or 43 wherein twenty or more different materials comprising two or more layers are formed on twenty or more distinct regions of the substrate, the density of the twenty or more material-containing regions being greater than about 1 region per cm^2.

54. (Previously Presented) The method of claim 42 or 43 wherein one hundred or more different materials comprising two or more layers are formed on one hundred or more distinct regions of the substrate, the density of the one hundred or more material-containing regions being greater than about 1 region per cm^2.

55. (Previously Presented) The method of claim 42 or 43 wherein one thousand or more different materials comprising two or more layers are formed on one thousand or more distinct regions of the substrate, the density of the one thousand or more material-containing regions being greater than about 10 regions per cm^2.

56. (Previously Presented) The method of claim 42 or 43 wherein ten thousand or more different materials comprising two or more layers are formed on ten thousand or more distinct regions of the substrate, the density of the ten thousand or more material-containing regions being greater than about 100 regions per cm^2.

57. (Canceled)

58. (Previously Presented) The method of claims 42 or 43 wherein ten or more different materials are intermetallic materials.

59. (Previously Presented) The method of claims 42 or 43 wherein ten or more different materials are metal alloys.

60. (Previously Presented) The method of claims 42 or 43 wherein ten or more different materials are ceramic materials.

61. - 63. (Canceled)

64. (Previously Presented) The method of claims 42 or 43 wherein the components of the ten or more different materials are delivered as solids.

65. (Previously Presented) The method of claims 42 or 43 wherein ten or more different materials are each formed by a method that comprises sequentially delivering the first component, the second component, a third component, and optionally additional components of the material to form three or more layers at the predefined region.

66. (Previously Presented) The method of claim 24 wherein the components are delivered using electron beam evaporation techniques.

67. (Previously Presented) The method of claim 42 or 43 wherein the ten or more different materials comprise layers of two or more components, at least one of the components being

different between the ten or more materials, and at least one of the components being the same between the ten or more materials.

68. (Currently Amended) A method for making an array of diverse materials, the method comprising

forming ten or more inorganic materials on ten or more predefined discrete regions of a rigid substrate, respectively, each of at least ten of the materials being different from each other and **each** being formed **from at least two components in each region** by a method that comprises

delivering a first component of ~~the material~~ **of each of said materials** to **each of** the respective predefined discrete ~~region~~ **regions** of the substrate to form a first solid layer ~~of~~ **comprising** the first component on the substrate **in each region**,

delivering a second component of ~~the material~~ **of each of said materials** to **each of** the respective predefined discrete ~~region~~ **regions** to form a second solid layer ~~of~~ **comprising** the second component on the first layer **in each region**, ~~and~~

varying the **combination** ~~composition, concentration or thickness~~ of the delivered ~~first or second~~ components ~~between~~ **among** respective regions **; and**

allowing the components to interact by intermingling, interdiffusing, interspersing, doping, implanting, interpenetrating, condensing, or fusing.

69. (Previously Presented) A method for identifying useful materials, the method comprising

making an array comprising ten or more different materials as set forth in claim 68,

screening the at least ten different materials for a useful property of interest, and

determining the relative performance of the at least ten different materials with respect to the property of interest.

70. (Currently Amended) A method for making an array of diverse materials, the method comprising

forming ten or more inorganic materials on ten or more predefined discrete regions of a substrate, respectively, each of at least ten of the materials being different from each other, and **each** being formed **from at least five components in each region** by a method that comprises

sequentially delivering five or more components of ~~the material~~ **of each of said materials** to **each of** the ~~respective~~ predefined discrete ~~region~~ **regions** of the substrate to form five or more solid layers of the delivered components, each of at least five of the delivered components being an inorganic element or compound; and

varying the **combination** ~~composition, concentration or thickness~~ of ~~at least one of~~ the five or more delivered components ~~between~~ **among** respective regions.

71. (Previously Presented) A method for identifying useful materials, the method comprising

making an array comprising ten or more different materials as set forth in claim 70,

screening the at least ten different materials for one or more useful properties of interest, and

determining the relative performance of the at least ten different materials with respect to the property of interest.

72. (Currently Amended) A method for identifying useful materials, the method comprising

forming one hundred or more solid inorganic materials on one hundred or more predefined discrete regions of a rigid substrate, respectively, each of at least one hundred of the materials being different from each other and **each** being formed **from at least two components in each region** by a method that comprises

delivering a first component of ~~the material~~ **of each of said materials** to **each of** the respective predefined discrete ~~region~~ **regions** of the substrate to form a first solid layer ~~of~~ **comprising** the first component on the substrate **in each region**,

delivering a second component of ~~the material~~ **of each of said materials** to **each of** the respective predefined discrete ~~region~~ **regions** to form a second solid layer ~~of~~ **comprising** the second component on the first layer **in each region**,

varying the **combination** ~~composition, concentration or thickness~~ of the delivered ~~first or second~~ components ~~between~~ **among** respective regions, and

allowing the delivered first and second components of the material to simultaneously interact under a set of conditions

the substrate comprising the at least one hundred material-containing regions at a density of greater than about 10 regions per cm^2, the substrate further comprising a sufficient amount of space between the at least one hundred material-containing regions such that the delivered components do not substantially interdiffuse between the at least one hundred material-containing regions of the substrate,

screening the at least one-hundred different materials for one or more useful properties of interest, and

determining the relative performance of the at least one-hundred different materials with respect to the property of interest.

73. (Canceled)

74. (Currently Amended) A method for identifying useful materials, the method comprising forming ten or more inorganic or non-biological polymeric materials on ten or more predefined discrete regions of a substrate, respectively, each of at least ten of the materials being composite materials that are different from each other and **each** being formed **from at least two components in each region** by a method that comprises

delivering a first component of ~~the composite material~~ **each of said composite materials** to **each of** the respective predefined discrete ~~region~~ **regions** of the substrate to form a first solid layer ~~of~~ **comprising** the first component on the substrate **in each region**,

delivering a second component of ~~the composite material~~ **each of said composite materials** to **each of** the respective predefined discrete ~~region~~ **regions** to form a second solid layer ~~of~~ **comprising** the second component on the first layer **in each region**, and

varying the **combination** ~~composition, concentration, or thickness~~ of the delivered ~~first or second~~ components ~~between~~ **among** respective regions,

screening the at least ten different composite materials for one or more useful properties of interest, and

determining the relative performance of the at least ten different composite materials with respect to the property of interest.

75. (Previously Presented) The method of claim 68 wherein the ten or more regions of the substrate are defined by chemical or physical barriers.

76. (Previously Presented) The method of claim 68 wherein the ten or more regions of the substrate are defined by physical barriers selected from the group consisting of dimples, wells and vessels.

77. (Previously Presented) The method of claims 42, 68, 70 or 74 wherein the method for forming each of the at least ten different materials further comprises allowing the delivered first and second components of the material to simultaneously interact under a set of conditions.

78. (Previously Presented) The method of claim 74 wherein the ten or more materials are inorganic materials.

79. (Previously Presented) The method of claim 74 wherein the ten or more materials are polymeric materials.

80. (Previously Presented) The method of claim 74 wherein the ten or more different inorganic or non-biological polymeric materials are formed on the ten or more predefined regions of the substrate to form an array of materials consisting essentially of the substrate and the ten or more different materials.

81. (Previously Presented) The method of claims 68 or 69 wherein the array comprises at least 10,000 different materials comprising two or more layers.

82. (Previously Presented) The method of claims 68 or 69 wherein one thousand or more different materials comprising two or more layers are formed on one thousand or more discrete regions of the substrate, the density of the one thousand or more material-containing regions being greater than about 10 regions per cm^2.

83. (Previously Presented) The method of claim 68 or 69 wherein the ten or more different materials comprise layers of two or more components, at least one of the components being different between the ten or more materials, and at least one of the components being the same between the ten or more materials.

84. (Currently Amended) A method for making an array of diverse materials, the method comprising

forming ten or more inorganic materials on ten or more predefined discrete regions of a rigid substrate, respectively, each of at least ten of the materials being different from each other and **each** being formed **from at least two components in each region** by a method that comprises

delivering a first component of ~~the material~~ **of each of said materials** to **each of** the respective predefined discrete ~~region~~ **regions** of the substrate to form a first solid layer ~~of~~ **comprising** the first component on the substrate **in each region**,

delivering a second component of ~~the material~~ **of each of said materials** to **each of** the respective predefined discrete ~~region~~ **regions** to form a second solid layer ~~of~~ **comprising** the second component on the first layer **in each region**, and

varying the **combination** ~~composition, concentration, or thickness~~ of the delivered ~~first or second~~ components as a gradient ~~between~~ **among** respective regions.

85. (Previously Presented) A method for identifying useful materials, the method comprising

making an array comprising ten or more different materials as set forth in claim 84,

screening the at least ten different materials for a useful property of interest, and

determining the relative performance of the at least ten different materials with respect to the property of interest.

86. (Previously Presented) The method of claims 84 or 85 wherein the method for forming each of at least ten of the materials further comprises delivering a third component of the material to the respective predefined discrete region to form a third solid layer of the third component on the second layer.

87. (Previously Presented) The method of claim 86 wherein each the at least ten different materials consist of a first, second and third component selected from a group of four components.

88. (Currently Amended) A method for making an array of diverse materials, the method comprising

forming ten or more inorganic materials on ten or more predefined discrete regions of a rigid substrate, respectively, each of at least ten of the materials being different from each other and **each** being formed **from at least two components in each region** by a method that comprises

(a) delivering a first component of ~~the material~~ **of each of said materials** to **each of** the respective predefined discrete ~~region~~ **regions** of the substrate to form a first solid layer ~~of~~ **comprising** the first component on the substrate **in each region**,

(b) delivering a second component of ~~the material~~ **of each of said materials** to **each of** the respective predefined discrete ~~region~~ **regions** to form a second solid layer ~~of~~ **comprising** the second component on the first layer **in each region**,

(c) varying the **combination** ~~composition, concentration, or thickness~~ of the delivered ~~first or second~~ components ~~between~~ **among** respective regions, and

(d) repeating steps (a), (b) and (c) at least once to form a lattice or superlattice comprising the first and second components.

89. (Previously Presented) A method for identifying useful materials, the method comprising

making an array comprising ten or more different materials as set forth in claim 88,

screening the at least ten different materials for a useful property of interest, and

determining the relative performance of the at least ten different materials with respect to the property of interest.

90. (Previously Presented) The method of claims 88 or 89 wherein the method for forming each of at least ten of the materials further comprises delivering a third component of the material to the respective predefined discrete region to form a third solid layer of the third component on the second layer, such that the lattice or superlattice comprises layers of the first, second and third components.

91. (Previously Presented) The method of claim 90 wherein the method for forming each of at least ten of the materials further comprises annealing the lattice or superlattice for low-temperature diffusion between component layers.

92. (Canceled)

93. (Currently Amended) The method of claim 90 wherein the method for forming each of at least ten of the materials further comprises annealing at a temperature ranging from about 200°C to about 300°C **whereby the components interact, without reaction, by intermingling, interdiffusing, interspersing, doping, implanting, interpenetrating, condensing or fusing**.

94. (Currently Amended) The method of claim ~~92~~ **93** wherein the method for forming each of at least ten of the materials further comprises sintering at a temperature ranging from 800°C to about 1000°C.

95. (Previously Presented) The method of claim 90 wherein each of the first, second and third layers are thin films having a thickness ranging from about 100Å to about 1000Å.

96. (Currently Amended) The method of claims 68, 70, 72, 74 or 84 wherein the **combination of delivered components is varied by varying** composition of the delivered first or second components ~~is varied between~~ **among** respective regions.

97. (Currently Amended) The method of claims 68, 70, 72, 74 or 84 wherein the **combination of delivered components is varied by varying** concentration of the delivered first or second components ~~is varied between~~ **among** respective regions.

98. (Canceled)

99. (Currently Amended) The method of claims 68, 70, 72, 74 or 84 wherein the **combination of delivered components is varied by varying** thickness of the delivered first or second components ~~is varied between~~ **among** respective regions.